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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,612	10/24/2003	Yasuhiko Kokami	HITA.0448	7205

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EXAMINER

OLSON, JASON C

ART UNIT PAPER NUMBER

2651

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/691,612	Applicant(s) KOKAMI, YASUHIKO	
	Examiner Jason C Olson	Art Unit 2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 4-6, 8 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/24/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: misspelled words. The word ramp is misspelled throughout the specification as, "lamp", see page 20, line 4 and 6 as an example. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawachi et al. (US 6,396,652) hereinafter Kawachi, and Boutaghou et al. (US 6,243,222), hereinafter Boutaghou.

Regarding claim 1, Kawachi teaches a first motor which rotates a magnetic disk (see col. 6, ln. 17-18); a first motor drive circuit which rotatably drives the first motor (see figure 3, item 21); a magnetic head which effects read of information on a storage track on the magnetic disk (col. 6, ln. 18-28); a second motor which moves the magnetic head over the magnetic disk (col. 6, ln. 14-17); a second motor drive circuit which rotatably drives the second motor (see figure 3, item 24); and a drive control circuit which controls currents caused to flow through coils of the first and second motors by the first motor drive circuit and the second motor drive circuit (col. 6, ln. 30-37), wherein, upon loading the magnetic head from a standby position to the surface of

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the magnetic disk (col. 6, ln. 7-13). Kawachi fails to disclose the drive control circuit makes a rotational speed of the first motor slower than a rotational speed at a normal operation, however, Boutaghou is relied upon to teach disclose the drive control circuit makes a rotational speed of the first motor slower than a rotational speed at a normal operation (see col. 9, ln. 17-30 of Boutaghou). It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve upon unloading a head onto a disk of Kawachi by applying the teaching of moving the head from the ramp onto the disk while the rotational speed is slower than operating speed as taught by Boutaghou for the purpose as described in column 4, lines 17-24 by Boutaghou.

Regarding claim 2, the combination of Kawachi and Boutaghou teach all the limitations of claim 1 above. The combination further teaches the drive control circuit causes the first motor drive circuit to perform a step-up converter operation upon power shutoff to thereby perform power-conversion into a DC voltage higher than an amplitude value of each of three-phase back electromotive voltages (B-EMF: Back-electromotive force) developed by rotation of the first motor, and operates the magnetic head at the DC high voltage to move the magnetic head to a predetermined standby position (see col. 7, ln. 51-col. 8, ln. 15 of Kawachi and as depicted in figure 6 at time T1 the power is boosted or stepped-up after a power shutoff).

Regarding claim 3, the combination of Kawachi and Boutaghou teach all the limitations of the claims above. The combination further teaches wherein the drive control circuit controls a current flowing through each of coils of the first motor in accordance with a current command value sent from the system control device to thereby control the rotational speed of the first motor (see col. 1, ln. 56-62 of Kawachi), and upon the power shutoff, operates the system control device by a high voltage taken out of the back electromotive voltages in accordance with the step-up converter operation of the first motor drive circuit (see col. 7, ln. 51-col. 5, ln. 15 of Kawachi).

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Regarding claims 11 and 12: claims 11 and 12 have limitations similar to those treated in the above rejection(s), and are met by the references as discussed above.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kawachi and Boutaghou as applied to claims above, and further in view of Hussein (US 6,285,521).

Regarding claim 7, the combination of Kawachi and Boutaghou teach all the limitations of the claim 1 above. The combination fail to teach a first motor drive circuit includes transistors (see col. 7, ln. 44-48) that cause currents to flow through the coils of the first motor (see col. 7, ln. 42-44), and the drive control circuit carries out on/off-control of the transistors according to a pulse width control system (see col. 7, ln. 37-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve upon the spindle motor driving circuit of the combination of Kawachi and Boutaghou by applying the teaching of a pulse width modulated driving circuit as taught by Hussein for the purpose as stated in column 7, line 31-36 of Hussein.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kawachi and Boutaghou as applied to claim 1 above, and further in view of Nakamura et al. (US 5,754,355) hereinafter Nakamura.

Regarding claim 10, the combination of Kawachi and Boutaghou teach all the limitations of the claims above. The combination fail to teach the magnetic head is comprised such that a gap with respect to the surface of the magnetic disk becomes small as the rotational speed of the first motor increases, however, Nakamura is relied upon to teach the magnetic head is comprised such that a gap with respect to the surface

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of the magnetic disk becomes small as the rotational speed of the first motor increases (see col. 6, ln. 40-43 of Nakamura). It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve upon the magnetic head or transducer of the combination of Kawachi and Boutaghou by applying the teaching of a negative pressure transducer as taught by Nakamura for the purpose as stated in column 2, line 18-25 of Nakamura.

Allowable Subject Matter

Claims 4-6, 8, and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 4, the prior art fails to teach alone or in combination a drive control circuit detects the phase of the back electromotive voltage developed in each of the coils of the first motor and applies a voltage amplitude larger than an amplitude of the back electromotive voltage to each of the coils of the first motor in synchronism with the back electromotive voltage to thereby rotatably drive the motor, and applies a voltage amplitude smaller than the amplitude of the back electromotive voltage to each of the coils of the first motor in synchronism with the back electromotive voltage developed in each of the coils of the first motor, to thereby allow the first motor to execute a step-up converter operation.

Regarding claim 5, the prior art fails to teach alone or in combination a drive control circuit includes an error amplifier which amplifies a potential difference between a voltage generated by a step-up converter operation of a first motor and a predetermined control voltage, and the drive control circuit applies a voltage amplitude corresponding to an output of the error

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amplifier to each of the coils of the first motor upon a power shutoff, to thereby allow the first motor to perform the step-up converter operation.

Regarding claim 8, the prior art fails to teach alone or in combination a boost circuit which steps up a power supply voltage or the voltage generated by the step-up converter operation of the first motor drive circuit wherein the first motor drive circuit includes circuits which generate signals for turning on and off the transistors by the boost voltage generated by the boost circuit.

Regarding claim 9, the prior art fails to teach alone or in combination a back electromotive voltage phase detecting means which detects the back electromotive voltage developed in each of the coils of the first motor, wherein the system control device generates a voltage command value having a voltage amplitude corresponding to the current instructions in synchronism with the back electromotive voltage detected by the back electromotive voltage detecting means and supplies the voltage command value to the drive control circuit.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason C Olson whose telephone number is (571)272-7560. The examiner can normally be reached on Monday thru Thursday 7:30-5:30; alternate Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Hudspeth can be reached on (571)272-7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCO

February 3, 2005


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